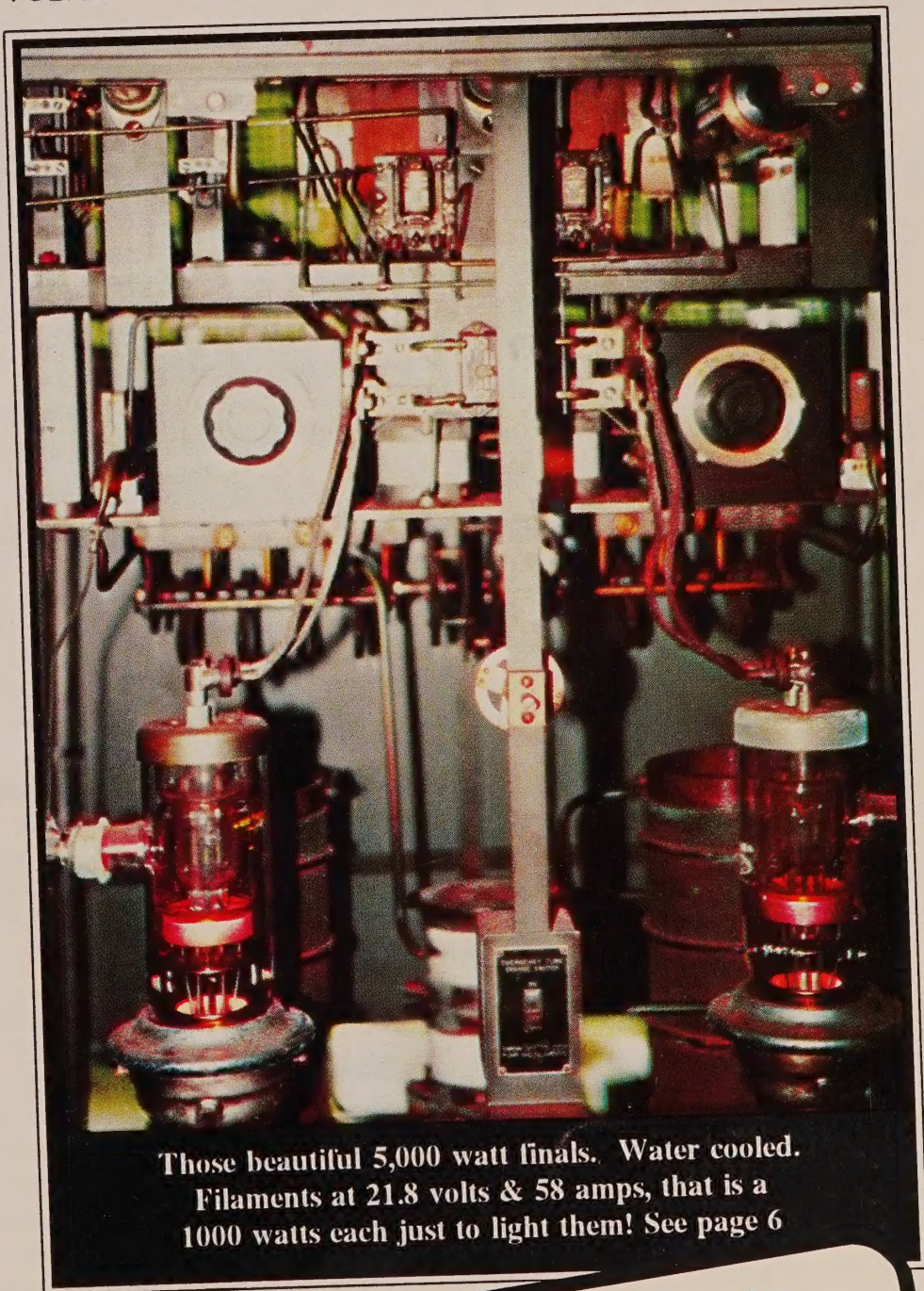


THE ANTIQUE

RADIO

VOL. 21 • WINTER 1993 • NO. 4

GAZETTE



Those beautiful 5,000 watt finals. Water cooled.
Filaments at 21.8 volts & 58 amps, that is a
1000 watts each just to light them! See page 6



"The Ghosts
of Radio Past"

The Antique Radio Gazette is the official publication of The Antique Radio Club of America, Inc.

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SEE PAGE 36 FOR DETAILS.

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March 31	February 15
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COMING NEXT ISSUE

Burndept Ethophone Grand.....Dr. Ralph Muchow

Plus all of your regular featured articles

The President's Page

by Lloyd McIntyre

Here we are in the grip of winter!

This one has kept many of us indoors checking and cleaning some of those grand old relics of the past. I am sure if this weather keeps its pace up, many of us in the northern part of the country will have plenty of room cleared to make room for the treasures of 1994.

It will only be a few weeks until "Spring Fever" in Washington, PA. March 26 marks the date with this year's event being hosted by five clubs and organizations. This is a very cost-effective way for everyone to get together and sell off some of that surplus we just finished stacking by the rear door, and replace it with a new found treasure from the second annual Rx for "Spring Fever". If you need information, check with Bill Dawson. His address is on the inside front cover.

The Spring issue will bring us information on the ARCA '94 convention in Little rock. Be sure and mark that date as the first major event of summer. Only one week later the Mid-Atlantic Antique Radio Club will host a two-day event at New Carrollton. This was the site of the very successful MAARC/ARCA event four years ago. June 17 & 18, and as they say, "MAARC your calendar".

I want to take this opportunity to wish Mel Comer a speedy recovery from his recent illness. Mel, we cannot go long without some words from your "Corner".

I have received a disheartening letter from my good friend, Don Patterson. After 20 years of publishing the monthly magazine "Radio Age", Don and his coeditor wife, Norma, have shut down the presses of this great magazine. In reviewing Don's letter, the problems facing any one publishing a newsletter, magazine, or even our own GAZETTE, is the ongoing rise in the cost

of printing and postage. To say nothing of the hundreds of hours of dedication, without monetary consideration, this hobby has to have more dedicated support. As I review the different clubs around the country, as they publish their financial reports, one can see that the majority of membership funds goes for publishing the club newsletter. Now the U.S. Postal Service is telling us to stand by for news of a new postage increase. We are all going to have to combine our resources, if we are to survive the pressure of continued inflation. The Board of Directors of ARCA, through much deliberation, was forced to increase annual dues for ARCA effective January 1. Future increases can be avoided if everyone will work to bring new members in and current members renew without delay. When we forget to renew, this cost alone of sending past due notices, sorting of the mail for new members and lapsed members can take one-third of your annual dues. Please be there for your club, it needs your support. We know there are many clubs around the country, but a national newsletter to bring all of the clubs together is essential to the growth and sanity of this historical effort. Let's support the GAZETTE and not be faced with the presses stopping, as they have with "Radio Age".

The directors and officers of ARCA wish the very best to Donald and Norma and thank them from the very bottom of our hearts for their 20 years of dedication to this great fraternity of radio historians.

See you next at "Spring Fever".



OLD-EQUIPMENT CONTEST

AWA-Rochester, N.Y. Courtesy of Geoff Bourne September 1993

THE WESTINGHOUSE CATEGORIES

1. Commercial Equipment, Any Period.

First: Seth Ward - AC Voltmeter

2. Tubes

First: Bob Murray - Canadian W Tube Display

Second: Richard Brewster - W Tube WT25

Third: John Parsons - W Tubes, Cartons, and Assorted Items

3. Equipment, Beginning to 1930s

First: Stephen Brown - Radiola Grand Display

First: Ed Bell - Aeriola Grand

Second: Todd Prowell - Early W RA-DA

Third: Richard Brewster - W Aeriola Jr. Crystal Set

4. Post-WW-II Receivers

First: -Second: Michael Raide

Third: Bob Raide

5. TV Transmission & Reception (No entry)

6. Military Equipment

First: Richard Brewster - W SE-1012

7. Documents & Advertising

First: Jim Sutherland - "Adventures in Research" Radio Broadcast, 1912-54

Second: Peter Yanczer - W Sign, 1930s

Third: John Parsons - Radio Station Verifications

THE STANDARD CATEGORIES

8. Passive Receivers

First: William Stokes - "Building an Old-Time Wireless Receiver"

9. One- & Two-Tube Receivers

First: Ron McClellan - F. B. Chambers 1913 Time Receiver

Second: George Ayers - Tuska Model 222

Third: Billy Richardson - Browning-Drake

10. Three-Tube Receivers

First: Robert Lozier - German Peoples' Sets

Second: Art Kingsley - 1928 French Regenerative Set

Third: Ross Smith - Federal 110

11. Four- & Five-Tube Receivers

First: Neil Friedman - A. J. Stevens Model F6
First: Eric and Sirelle Fogel - Martian Beauty with matching amplifier
Second: David Cheney - Northern Electric
Third: Gale Perkins - GE 1933 Model K40 AC-DC

12. Six-or-More-Tube Receivers

First: Ron Frisbie - Golden Leutz
Second: Scott MacWilliam - Raven Superhet

13. Spark Transmitters & Artifacts

First: Mike Katzdorn - Vibroplex Owned by Elmo Pickerill
Second: Edward White - Combination Boards with Transmitter, Loose Coupler, etc.
Third: Michael Raide - Low-Power 1912 Spark Transmitter

14. Vacuum-Tube Transmitters

First: Allen Jochem - 1937 Battery Portable Amateur Station
Second: Bob Mattson - Gross CW-25 Transmitter
Third: Bob & Michael Raide - 1940 Hallicrafters HT-9

15. Novelty Radios (no entry)

THE CRAFTSMAN CATEGORIES

16. Restoration of Appearance

First: Ernie Hite - Firth Vocophone Model A, 1921
First: Dave Abramson - RCA TRK-120 Prewar TV-AM-SW Set
Second: Billy Richardson - Leutz Screen-Grid Phantom with Power Supply
Third: Stephen Short - Grebe CR-9

17. Restoration of Operation

First: Peter Yanczer - Western TV, ca. 1931 (camera and amplifier are scratch-built; Felix doll is original)

18. New-for-Old

First: Billy Richards - Federal "109S" Superhet
Second: Donald Holdaway - 1934 Home-Built Short-Wave
Third: John Wiesner - Home-Built Short-Wave Radio, 1930s Design

Judges: Geoffrey Bourne for Ralph Williams John Caperton,
Alan Douglas, Richard Brewster, Peter Yanczer, Billy Richardson
(self-disqualifying during judging of their entries)
Elinor Williams - Secretary

OTHER AWARD WINNERS

Houck - Documentation: Bill Holly Houck - Preservation: Mike Feher Tyne: Edward Herold (posthumous) Thompson/Best of Show: Stephen Brown Exhibit: Floyd Jury - WW I Air-Ground Spark System Elle: (none awarded) Matlack: Bob & Mike Raide BK-OTB: Peter Yanczer President's: Ludwell Sibley



Nick Fantasia Jr. joins the "gang" for this shot as we prepare to leave the transmitter and tower site.

5,000 Watts Of Friendship

John W. Haught
Preface

The year is 1928, the year that Herbert Hoover defeats Al Smith, Hoover promising everyone "a chicken in every pot and a car in every garage", Mae West is "Diamond Lil" on Broadway, Steamboat Willie opened in New York City (the first cartoon to feature sound) and Otto Messmer's cartoon cat Felix is used to monitor and fine-tune a series of experiments with the new medium called television.

Also in 1928 a new radio broadcasting station, WMMN, Fairmont, West Virginia, begins broadcasting just 8 years after KDKA, Pittsburgh, Pennsylvania, started regular weekly broadcasts.

Because radio station WMMN was, and still is, a true pioneer of radio in west Virginia, and after the removal offer was made by station owner Nick Fantasia Jr. to visit the transmitter/towers site, it was decided by the volunteers of the Museum of Radio & Technology to tear-down, remove, transport and setup again the 1935 Western Electric 355-E-1 broadcasting equipment at the

Museum of Radio & Technology at Huntington, West Virginia.

The day to begin this momentous task (and labor of love) begins with the early morning meeting of 7 brave souls (dedicated to the preservation of radio history) that vow to complete the tear-down and removal by nightfall! Those assisting in the removal project were, Geoff Bourne, Fred Crews, Lloyd McIntyre, John Haught, Roger Lynch, Dave Manning, and Walter Sayre.

To find this vintage transmitter in pristine condition was a little eerie! As we opened the panel doors and started our exploratory mission it was as if some great event had occurred some twenty years ago that shut this monster of a water cooled transmitter off.

As we explored the transmitter station rooms, old office, etc., we found old log sheets, spare vintage tubes, original equipment manuals, original station license from the beginning of the first broadcast and the original blueprint of the antenna/radial system layout. We found the power supply wire cage locked, keys long lost, therefore the power supply and the rear of the transmitter panel sections had not been disturbed since shutdown many years ago.

Not a single knob, meter, panel light, etc., had been removed; the transmitter, power supply, and monitor was intact and in mint condition! The transmitter was originally installed and expertly trimmed with wood by craftsmen from that period of time - what beautiful work!

In the ensuing years, other transmitters had been installed adjacent to the vintage transmitter, while the temptation by station engineers to move a piece of this vintage equipment, or remove a knob or meter, was resisted.

Geoffrey Bourne, President, The Museum Of Radio & Technology, Inc., directed our removal and loading activities without any mishaps to man or equipment; what an accomplishment in tearing down, moving, and loading vintage heavy transmitting equipment!! The unloading of the transmitter equipment and preliminary setup was completed the next day with thanks to all involved. This task was completed by Geoff Bourne, Ed Clay,

Steve Hall, Grace McMillen, Lloyd McIntyre, Dave Manning, Zane Parsons & Zane Jr., Walter Sayre, Art & Tim Wills, and Jack Woodrun.

WMMN History

In the beginning, in 1928, the Holt-Rowe Novelty Company of Fairmont, West Virginia, purchased the transmitter of WEBH, Chicago, Illinois, and installed it at the Fairmont Hotel with two 90-foot towers on the roof, the towers becoming a local landmark for many years. FCC approval was granted to operate at 500 watts daytime and 250 watts nighttime on a frequency of 890kc.

In 1935, WMMN was purchased by Fort Industry Company of Toledo, Ohio. The studio was moved to 208 Adams Street and plans were made to construct a new transmitter building and towers near Fairmont, at Monongah. The new Western Electric transmitter was installed, along with three 280-foot self-supporting towers, and the power was increased to 5,000 watts day and night operation.

The coverage area of WMMN is the central and northern area of West Virginia, also western Pennsylvania, western Maryland, and eastern Ohio. It has been reported that the station has received mail from over thirty-states and two provinces in Canada.

Station Equipment Description

The equipment moved to the Museum on July 31, 1993, is as follows: Western Electric 1935 vintage transmitter type 355-E-1, serial #122, with two W.E. 343A water cooled tubes in the final. Filament voltage is 21.5 volts at 58 amperes.

The crystal oscillator consists of type 700C Western Electric tubes, and 1-271 tube. The buffer and intermediate amplifiers consisted of 4-271A and 2-212E (modulated). Plate current of the final stage (2-W.E. 343A) is 700Ma/tube at a plate voltage of 10,000 volts.

Class A modulation is used with a W.E. 295A tube at a plate voltage of 1,200 volts, modulated by 2-212E tubes (low level modulation) with a plate voltage of 3,000 volts. The modulation

monitor is a RCA 66A, and its plate power supply for the final stage is a W.E. D98473 with a rating of 11,500 volts at 2.0amps.

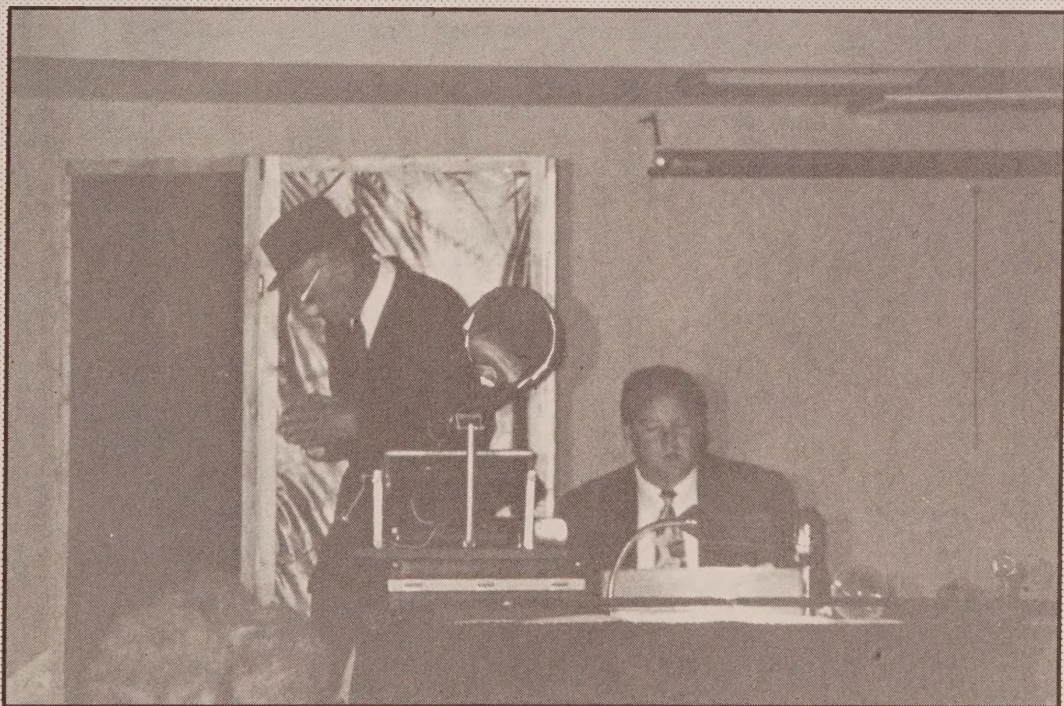
The automatic frequency control equipment is a W.E. 700C, quartz crystal controlled.

The directional antenna consists of three 280' towers, excited in phase and spaced at 644'.

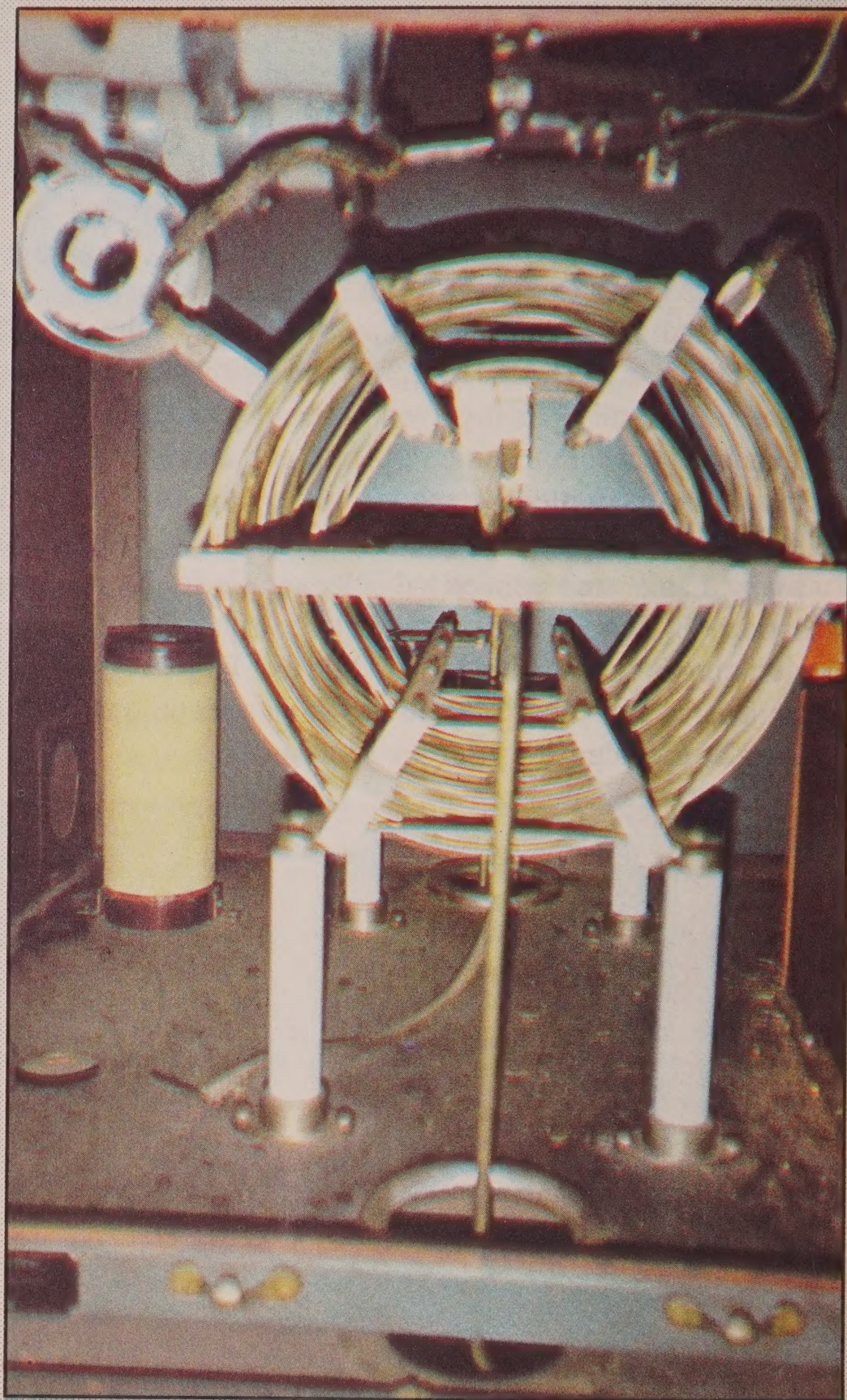
Summary

This removal setup project was conceived in the minds of Geoffrey Bourne and Lloyd McIntyre, and with their enthusiastic encouragement, all of us involved in this project are very proud of this historic accomplishment; please come visit the Museum and view the transmitter that made radio history by broadcasting 5,000 watts of Friendship, WMMN, Fairmont, West Virginia.

Many thanks are extended to Nick Fantasia Jr., present owner of Station WMMN, for saving the vintage transmitter equipment and donating it to the Museum, and Marilyn Fletcher of the West Virginia Broadcasters Association for her recommending the Museum as the depository for the transmitter.



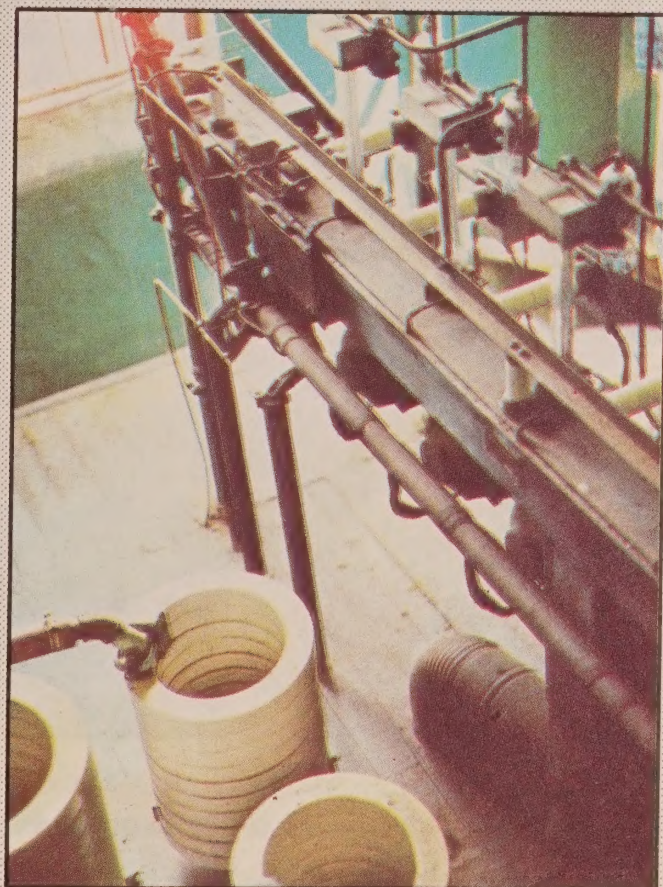
John Haught & Roger Lynch moving one of the 500lb cabinets of the Western Electric Transmitter



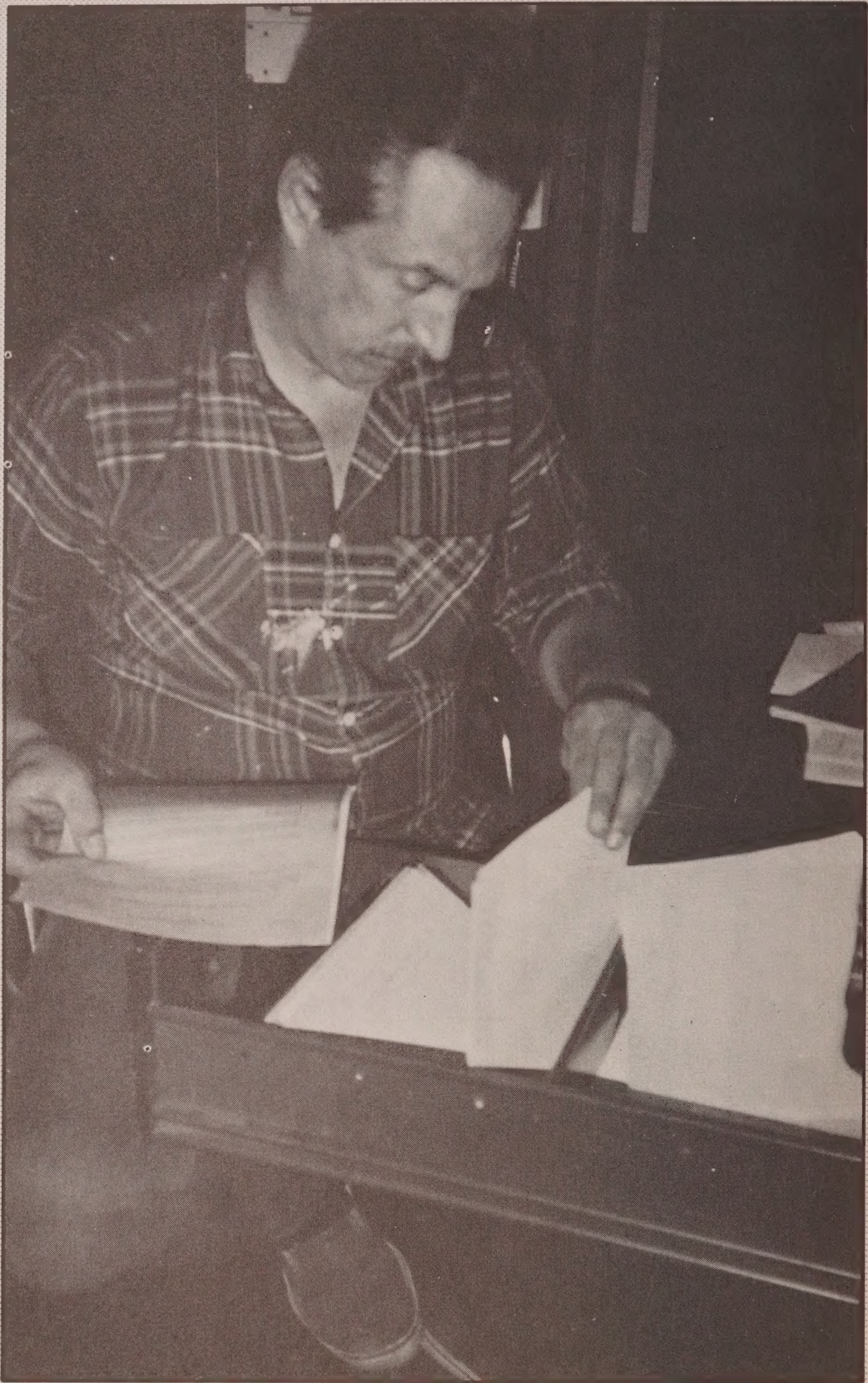
Final Tuning Coil



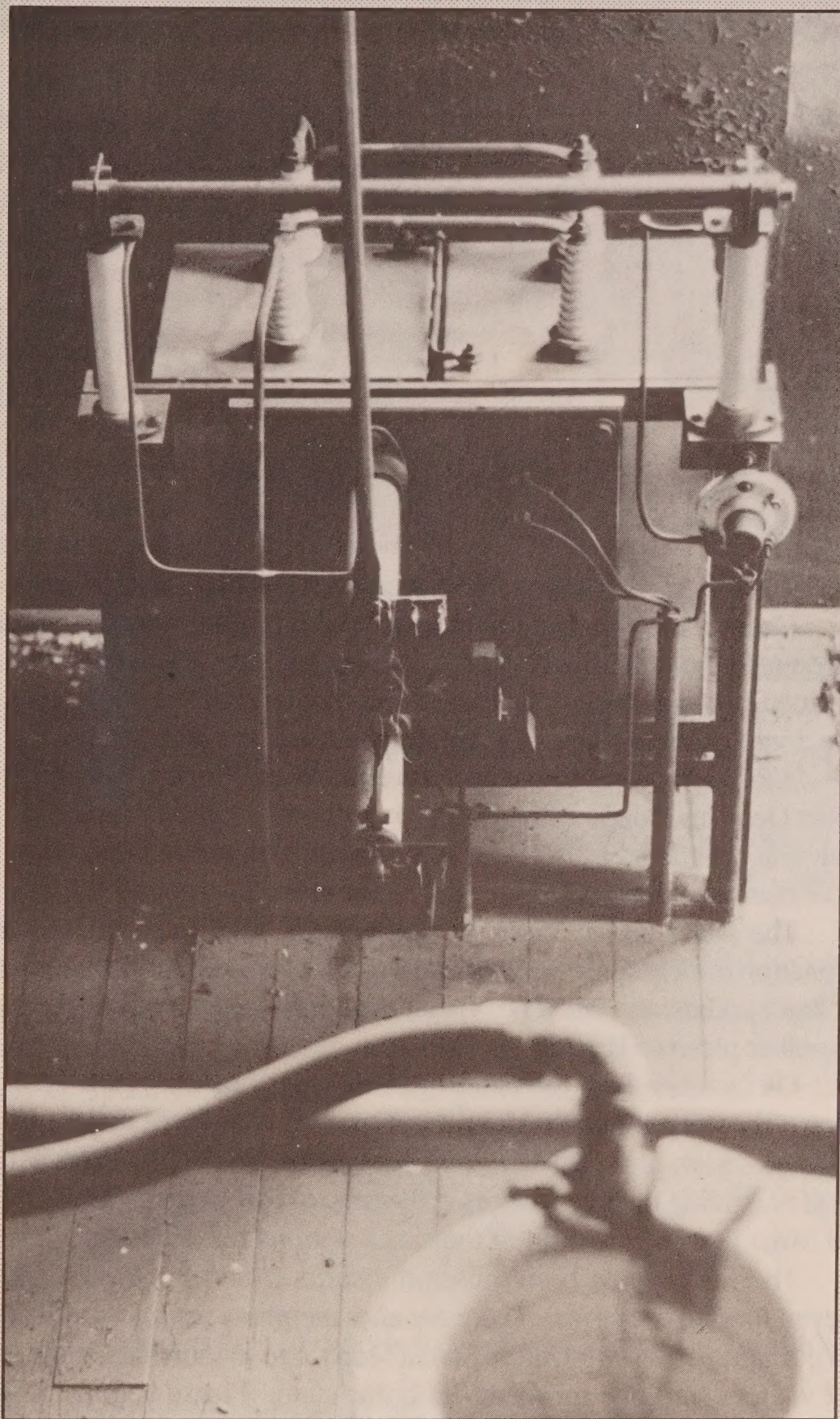
Roger Lynch removes bolts securing cabinet to floor.



Hi Voltage Rectifier bank & RF Isolation coils for water cooling of finals.



David Manning discovers all of the documentation back to the day the FCC authorized her to go on the air. All daily radio logs were also found complete.



Modulation filter capacitor & safety related bank.

NEWS FROM WEST VIRGINIA

Zane W. Parsons, N8OLD, Reporter



Winter, 1993.

Looks like we are about ready to put another year to rest. It seems that I can get rid of a year much quicker than I could fifty or so years ago. I speak for all members of the West Virginia Chapter in wishing

all of you Happy Holidays and a pleasant 1994.

Chapter election time is at hand and the nominations committee presented the candidate list at the October meeting. Ballots will be sent to members as a part of the November chapter newsletter. Voting will be done by return mail. All chapter members are urged to vote.

ARCA president Lloyd McIntyre and West Virginia Chapter President Geoffrey Bourne, along with some others, recently attended a radio auction conducted by the ARCA Kentucky Chapter in Louisville, KY. I've been told that some nice equipment changed owners.

The Museum of Radio & Technology very recently received a donation from Indiana. It is an IBM Systems 1 Computer. I have not seen it, but I understand that it is a vacuum tube device, and it is fairly heavy. Another piece of History.

On October 31st, the Huntington-Charleston ABC Television station did a story about the Museum. That makes all three major network affiliates now, plus CNN. Two radio stations, WRVC-FM and WTKZ-AM are giving us several spots at the time of this writing. Many thanks to Mike Kirtner, manager of the sister-stations for this help.

There have now been museum visitors from forty-two states and seven foreign countries. There are now members from fourteen states. We are preparing two United States Maps, one to indicated home states of visitors, and one for members home state. Please help us fill both maps. Well, thats it for 1993. Come see us, and collect more in '94. Last May 28th, in GRANOLLERS (Barcelona) was created the first

Vintage Wireless collectors society in Spain and all the things connected with it.

This society is called ASSOCIATION CULTURAL AMICS DE LA RADIO "A.C.A.R."



(Friends of radio, cultural association). This association pretends to form a group with all the people who wanted to know the history of this thoroughfare in our Country.

The most important objectives are: Encourage the collectors and its diffusion, and make all of kind of acts and activities and in particular cooperate in the creation or keeps the future vintage wireless museum.

This association pretends too, encourage the cooperation between collectors and all the things connected with the vintage wireless; History, radio set, technic document,.....

We believe that as you are thoroughfare, you could be interested in this news, and I agree you in this date, we counted the amount of 5.000 radio set, we think that is important you know, than in Spain there isn't any Vintage Wireless museum.

More Information:

Joan Julia-President-Tel 93-8671794

Esteve Pujal-Vicepres.-Tel + Fax 93-8794286

The address is: Associacio Cultural Amics De La Radio
C/. Rei Jaume, 55
08440 CARDEDEU
SPAIN



Make Your Plans Early

The Little Rock Convention and Visitors Bureau representing the cities of Little Rock and North Little Rock are pleased to extend this invitation to the members of the Antique Radio Club of America to convene in North Little Rock for its June 9-10-11, 1994 Annual Convention.

Location

Little Rock and North Little Rock are located in the heart of Mid-American and as such, are easily accessible to your delegates from across the country.

Hotel Site

The Riverfront Hilton, located in North Little Rock, is enthusiastic about the possibility of serving as headquarters of your National Convention. We recommend the beautiful accommodations, excellent meeting facilities and fine services available at this beautifully renovated hotel.

Entertainment

We offer something for every mood or taste.



Book Review

"The AWA Review" Vol. 8, 1993

Publisher: The Antique Wireless Association, Inc., Bloomfield, NY 14469.

Editor: Ludwell Sibley.

154 pages, 162 illustrations, 6 x 9 inches, \$12.50 postpaid.

Order from AWA Editor, 44 E. Main Street, Flemington, NJ 08822-12224.

This is the eighth in a series that began in 1986. As Bob Morris noted in the Forework to Vol. 1, the purpose of the Review is to record important historical material which, because of its scope, cannot be published in AWA's quarterly Bulletin.

The lead article is by Louis Meulstee, "Unusual Military Morse Keys." The title conceals the real scope of this article which also covers the equipment with which the keys were used. Visual signalling by way of a keyed electric lamp was used in both world wars. This article gives you 107 excellent illustrations.

We are indebted to Bruce Kelley, J. Vanicek, and Ludwell Sibley for their efforts in preserving for us an interesting presentation made in 1965 by that late tube historian, Gerald Tyne, "Rare Tubes: How To Recognize Them, and Why They Are Rare". Described and pictured is the LRS Relay of 1906 better known as the von Lieben tube. Also described and pictured are early tubes of DeForest, Marconi, Round and Western Electric.

For admirers of Fessenden, one of radio's greatest pioneers, David Kreuter gives us "A New Bibliography..." of Fessenden's astonishingly varied published papers. In addition to his writings on radio and electrical engineering, Fessenden also wrote on general physics, chemistry, mathematics, economics, and more.

Editor Sibley is author of "Federal as a Telephone Company". Collectors know Federal as a manufacturer of early radios, but here you will learn of Feera's origin in 1908 by way of a merger of three independent, eastern telephone companies, all competing with AT&T's Bell System.

Hank Olso and Bill Orr are authors of a 30-page account, "The KFS-Federal-Mackay Story" which tells the story of KFS, an early, west-coast marine radio station, and the men who created it. KFS was a center of electronic communications activity that continues to this day. The KFS era spans the sweep of electronics from the Poulsen Arc and the invention

of the triode to satellite digital communications.

Jerry Vanicek's article, "Joseph T. Fetsch: Vacuum Tube Engineer and Collector", describes the remarkable tube collection once displayed at the Material Laboratory of the Mew Your, Naval Shipyard. Included are five pages of pictures of various displays, going from the Fleming valve on through magnetrons. When in its wisdom the Navy regarded the collection "obsolete", it turned the collection over to Mr. Fetsch.

An article by Edward Duvall is an updating and expansion of an AWA monograph published in 1961. It is a nicely-illustrated "History of the National Electrical Supply Co." whose activities reach back to 1885. NESCO was a major supplier of receivers and transmitters to the U.S. Government during both world wars.

In his "Navy Electronics Directory", Fred Chesson provides a 25-page listing of "Naval Communications - Electronic Equipment", a listing reaching back to 1912.

Finally, we have an interesting, illustrated article, "A Glimpse At Old-Time Transmitter Development", which gives the text of a 1930 in-house report by G.E. engineer Walter Nelson on the difficulties, and finally success, that he experienced in "taming" a 200kW experimental broadcast transmitter, which used UV-862 water-cooled Radiotrons in parallel.

*Editor Sibley tells us that Volumes 6 & 7 of the Review are also available.
Reviewed by Bill Denk, W3IGU*

President of Kentucky Chapter
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"The Ghosts of Radio Past"

Script and Production
by Jim Duffield

Characters played by Jim Duffield
Radio Announcer (MC) by Randy Damron
Slides and Prop Assistant by Chris Spradling
Voice behind the Scenes by Jim Damron
Script Preparation by Patsy McIntyre

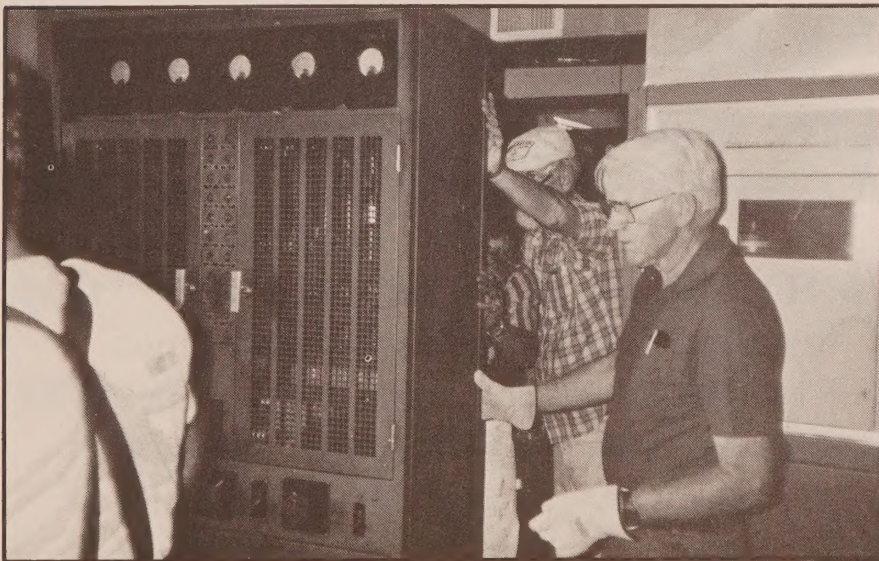
To those who give more than their share, enough can never be said. The Production that was presented at ARCA 1993 in June, at our Members's Appreciation and Awards Banquet was one of those efforts.

The countless hours in writing the script and then building the props to support the presentation was a heroic and historical effort. We owe Jim Duffield and his assistants an eternal debt of gratitude.

While just reading the script as it is presented here may be a little hollow, without the full stage production. It, nevertheless, in the eye of imagination that radio gave us, relives a vital part of history.

In the eye of your magazine editor, the production should have been captured for PBS televisions. That still could be a possibility. If you did not see it live, we hope you can enjoy a little of what you missed.

Lloyd McIntyre



The enactment of
"Ghosts
of Radio Past"

Jim Duffield
"Character"

Randy Damron
Announcer

ARCA

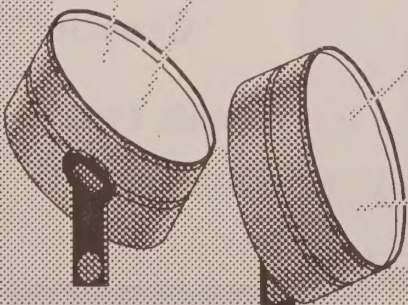
June 1993

"The Ghosts of Radio Past"

by Jim Duffield

NOTATIONS

Script Dialogue.....	About 25 Minutes
Demonstrations.....	About 10-15 Minutes
Overall Time.....	About 40-45 Minutes
Slide Presentations.....	Simultaneous



"The Ghosts of Radio Past"

MC: It has now been a little over a hundred years since radio and electronics began. Starting with the very elementary experiments of Heinrich Hertz. Later, many important developments by men of renown, contributed to the science of radio and electronics as we know of it today.

It certainly would be wonderful if we could bring them back. Just to talk to them and ask them about their experiments and developments.

First, there was Hertz, a German Physics teacher, born in Hamburg, Germany February 2, 1857. After graduating from school, he became an electrical engineer, but he was more adept at teaching, and he taught Physics in the famous Berlin Physical Institute, later in Karlsruhe Technical High School. He invented a number of devices. A new type of hygrometer, x-ray tubes, imaging through solids, a hot wire ammeter to detect high frequencies, then his famous experiments, a Dipole antenna, which we named in his honor - Hertz Antennas. With these using a high frequency spar, he detected transmission of radio waves across a room. The frequency of his antennas was about 2 meters, which frequencies are used extensively by radio amateurs today.

Yes, it sure would be wonderful if we could just talk to them. Hmmmmmm, Yes it sure would be wonderful.....

(Enters Ghost of Heinrich Hertz)

MC: (SURPRISE) goodness gracious, who are you?

HERTZ: I am ze ghost ov Heinrich Hertz, I hear you zay, you would like talk.

MC: Yes indeed, but you startled me Mr. Hertz. Just how did you come to discover electromagnetic waves?

HERTZ: Vell, mine teacher an mentor Professor Helm Holz urge me make more experiments een mine high school Physics Lab ver I vork as teacher. As you know, many men een past know about the electric vaves included Ben Franklin and

odders. Zo I zink vi not haff zame instrument rezeive electric vaves tru air, zo I make ziss spark transmitter zame length as loop vire in zize as rezeiver. Een dark room ve could zee sis spark across room on zee loop receiver.

Zee, I show **(DEMONSTRATION)** about 2 meetors

MC: Great thinking Mr. Hertz, and did you develop it further?

HERTZ: Do mine regret I no did. You zee I later took zick and die from infected toot. Odder men made great use mine experiments un di ple antennas. May you talk do ghost off Marconi, I zend heem.

(HERTZ DISAPPEARS)

MC: (Gives brief history of Marconi) Of course, Marconi is well known as the "Father of Radio Communication". He utilized the theories and experiments of many others, including Hertz, Maxwell and Lodge, in practical ways to make communication possible.

Guglielmo Marconi was born in 1874, in Bologna, Italy, to a well-to-do Bolognese landowner and silk merchant, and a Scots-Irish mother. He had very little formal education, but a neighbor, Professor Augusta Righi, of University of Bologna, tutored young Marconi. He gave him access to his laboratory and books. Righi had written a paper about Heinrich Hertz and his experiments. He reported the death of Hertz in Hamuary 1894. Young Marconi reading these articles was convinced that radio communication was possible. He set out to prove it by his own experiments. By 1896, he had accomplished just that.

The Marconis were well known in England through his mother and business. It was here he patented his wireless telegraph equipment. The English government, and particularly the Navy, became very interested in his equipment for naval communications. After many trails and improvements in equipment, he sent signals across London, then cross the Channel. In time he switched to low frequencies 10KC. to 100KC. and sent signals across the Atlantic. The Marconi Telegraph Company was then formed.

"It would be interesting to talk to Marconi".....

(ENTER GHOST OF MARCONI)

MC: Are you Marconi?

MARCONI: Yes sir, the ghost of Heinrich Hertz sent me. I am at your pleasure sir.

MC: Well, this is a surprise, and you speak perfect English, since you were an Italian!

MARCONI: Yes indeed sir, you see mother, who was Scots-Irish, taught me English and we spent a great deal of time in England. I also went about 6 months to the English school of Rugby.

MC: That is very interesting Mr. Marconi. Since you had very little formal schooling, how did you come to invent a practical wireless telegraph?

MARCONI: As a young man, 20 years old, I found school rather dull, so I became fascinated with the tests of Hertz and began experimenting. Using other men's theories as Maxwell, Lodge and Hertz.

MC: I see, and what did you do?

MARCONI: First, I built simple spark transmitters, then I added tuning, then connected to Hertz Dipoles. Later I used a Lodge coherer with metal filings in a tube as a detector with tuning and again Hertz type antennas. With this equipment I soon was able to send and receive signals about a mile away on our estate. Later I believed that if antennas were vertical, they could be made to go around mountains. This soon proved true. After my equipment was patented in England, I set out to build better equipment, longer range, so we used low frequencies about 10KD. to 100KC. with more power. After awhile, we sent signals across the Atlantic Ocean. Then many ship and land stations developed.

MC: Amazing how quickly you developed this equipment! Is that some of your equipment there?

MARCONI: Yes sir, I will demonstrate it for you!

(DEMONSTRATION: Spark transmitter & radio on) (Coherer)
Here is the transmitter and Coherer receiver. On your modern radio

it would sound like this (Radio on and spark xmitter)

MC: And you communicated across the Atlantic with similar equipment?

MARCONI: Yes, but with better equipment - more power - and long antennas. Sometimes handling more traffic than the Atlantic Cable.

MC: What happened to Marconi Company?

MARCONI: Well, with many new developments as crystal detector, the vacuum tubes, we abandoned our type transmissions. However, we converted to new equipment and the Company lasted into the 1920's. As you know, I am remembered today for the vertical grounded antenna and for proving the radio frequency spectrum.

MC: Yes indeed, Mr. Marconi, you are well remembered. The vertical antenna is used by most broadcasting stations today, and proving that radio waves can be tuned. But, vacuum tubes did change the entire radio industry.

MARCONI: Yes, of course. Talk to Edison about his discoveries.

(MARCONI DISAPPEARS)

MC: Hmmmmmm, yes, Edison did start the discovery of vacuum tubes, as well as the light bulb and phonograph.

Thomas Alva Edison was born in 1847 and died in 1931, and was called the greatest inventor in history. He only received about 3 months of formal education, since he irritated his teachers by asking too many questions. His mother was a school teacher and taught young Edison, but even she could not answer his many questions. For example, he wanted to know how chickens hatch eggs? He had seen hens setting on eggs, so he collected eggs and sat on them himself.

His mother bought him a chemistry book at age 9. He started experiments in his basement. He sold papers and candy on trains until he caught a baggage car on fire with his chemistry set. He was fired from his job, later he saved a station master's son from being run over by a drifting railroad car. The station master was

so grateful he taught young Edison Morse Code. Later Tom held several jobs as a telegrapher. His first wife, Mary Stilwell, a telegrapher, bore him three children, but she died about 15 years later. He married again in later years to Mina Miller, daughter of a wealthy inventor and manufacturer.

After inventing a new type ticker tape machine for the Stock Market, and selling it for \$40,000, he was able to set up a laboratory and workshop. Here and other workshops, he spent most of his time day and night, with little sleep, inventing and improving other inventions. Notably, the electric light bulb, power stations, phonograph, storage batteries, ticker tapes, motion pictures, mimeographs, typewriters, and telephone, to mention only a few.

He was known widely as the "Wizard of Menlo Park" - today a shrine. He came close to the invention of the radio tube. I wonder what he would say about that today?.....

(GHOST OF EDISON APPEARS)

EDISON: Well, young man, heard you talking about me. What is it you wanted to know?

MC: Mr. Edison, I know you pride yourself in inventing the light bulb and phonograph, but what about the "Edison Effect" with the bulb?

EDISON: EH - You will have to talk louder young man, you know I am very deaf!

MC: Oh yes, I forgot! That train conductor cuffed your ears for setting the baggage car on fire with your chemicals.

EDISON: EH - Oh yes, but that was not the cause of deafness, I tried to get on a train platform one day and a friend grabbed my ears to pull me up. Something snapped and I became deaf.

MC: Well, I'll talk louder. What was this "Edison Effect" you discovered?

EDISON: In making the light bulb, I noticed that when a light bulb was on and came near a galvanometer, the hands would move. So we placed a metal plate on the bulb and connected it to a galvanometer with other connection to bulb filament, we

Transistor Topics

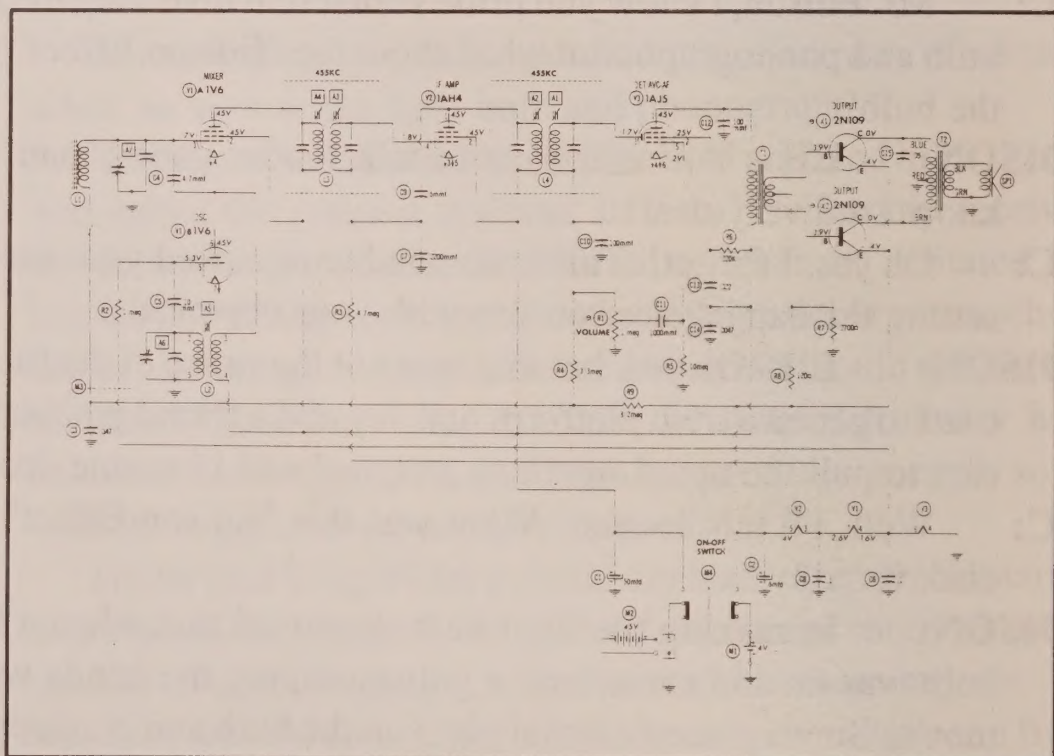
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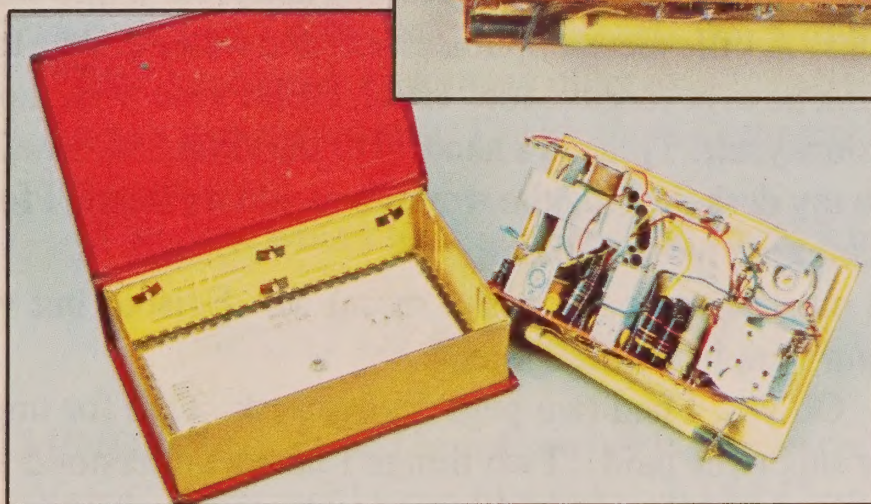
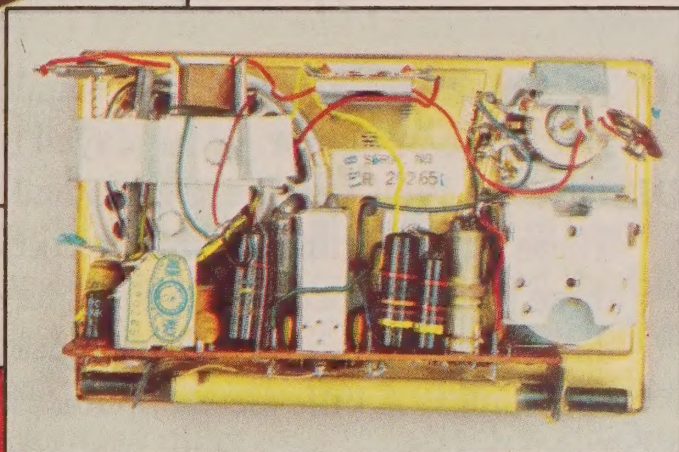
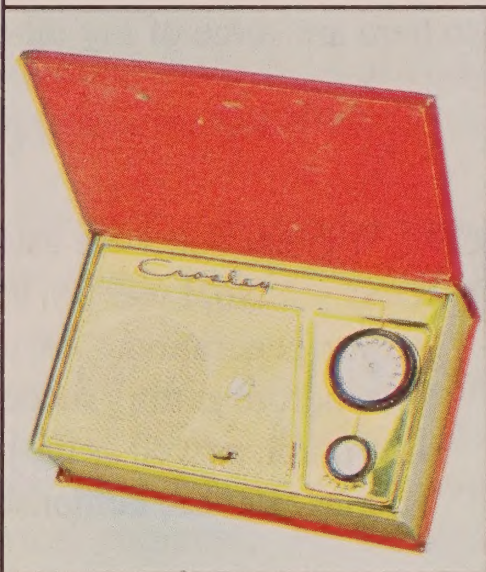
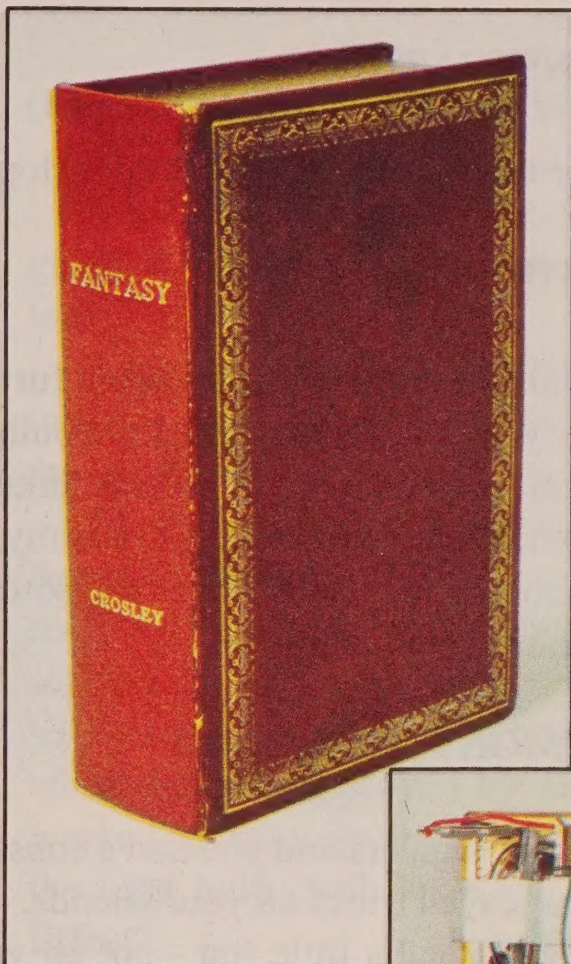
The Crosley Fantasy Model JM-8MN Book Radio

The subject Crosley Book Radio has a hybrid circuit with three subminiature tubes and two transistors. It was made in 1955 and 1956 during the time a few companies were making all-transistor sets. One of the smallest tube type sets of the day, it was very well designed and plays well for its size, measuring 7" long by 4 1/2" wide and only 2" thick. This small package includes a 4 volt "A" battery, Eveready E-233, and a 45 volt "B" battery, Burgess U30.

This radio is the second hybrid in a series covered by TRANSISTOR TOPICS. The first was a larger portable covered in Volume 21, number three of the Gazette, the Emerson Model 843. If you own a hybrid from this era, we would like to hear from you.

The hearing aid size tubes are 1V6 converter, 1AH4 IF amplifier, 1AJ5 detector AF amplifier, followed by two 2N109 output transistors in push-pull. The set tunes the AM broadcast band and has a 455 Kc (Khz) IF frequency. It is tuned by means of an open plate two-gang variable capacitor and it has a 2 1/2" PM speaker. The CROSLEY BOOK is a very desirable collectors item and you are lucky if you have one in your collection.





Pictures are courtesy of CTS-Turner Museum, by Joe Crison.

The radio pictured is from the collection of Charles Miller of Elkhart, Indiana.

found that current electricity would flow in circuit.

(DEMONSTRATION)

Also here are some of my other bulbs I and my friends developed

(SHOW)

MC: I guess you were astonished. Did you investigate further?

EDISON: No, I was too busy with developing the light bulb and power generation. As you know, we made several thousand tests before getting successful light bulbs, and that was my best invention; as well as the phonograph to bring light and sound to people. Let me demonstrate my phonograph.

(PHONO DEMONSTRATION)

MC: Amazing Mr. Edison, but I understand you had a considerable sense of humor. You played tricks on your friends.

EDISON: Well yes, we always had a little fun - not all work. There was that time a fellow worker opened his lunch box and three frogs jumped out. Should have seen his face! Then one day another fellow opened his lunch box and it burst into smoke and flames. A little piece of phosphorus and water did the trick. Don't think he ever forgave me. HEH, HEH! One trick though I pulled on myself. I placed a handful of the strongest, smelliest cigars on my desk, hoping the workers would try them. I found myself smoking most of them.

MC: You must have been quite a rascal Mr. Edison, but what about your simple billing system?

EDISON: Oh yes, I had two pegs on my desk. One for unpaid bills, the other for paid. Two things I never understood very well was math and women.

MC: Well, you have had lots of company there, but what about the story of your wife and the light bulb?

EDISON: Oh yes, she probably said it many times, "Tom, put out that silly light and come to bed." We did work long hours in the

lab. Well, got to go. Ask that man Fleming about the "Edison Effect" and his valve.

(EDISON DISAPPEARS - WITH LIGHTED BULB)

MC: Well, that was interesting. Ghosts can do unusual things I guess. Edison was quite a man, a great inventor affecting us all today.

Let's see now, Fleming was credited with using a vacuum tube for radio purposes, although many men before him had made tubes for x-raps and other uses.

Fleming utilized the so-called "Edison Effect" for a radio detector. John Ambrose Fleming was born in England, in the middle of the Nineteenth Century. He graduated from several schools in England as an electrical engineer. He worked at various posser stations and finally went to the United States where he was employed by The Edison Company. Here he worked on many electrical and mechanical problems, especially the light bulb (with Edison) and noted the peculiar "Edison Effect".

Later he went to work for the Marconi Company in England, where he perfected the Diode Tube, which he called the Electron Valve or Glow Valve. It did change AC to DC current and was used as a radio detector, but was just a little better than a crystal detector. It took many other men to perfect good Diode Tube Detector; however, The Marconi Company made and sold this tube.

I wonder what Fleming would say about it today?

(GHOST OF FLEMING APPEARS)

FLEMING: I say Yank, I heard you talking about me and my Glow Valve. What would you like to know Old Chap?

MC: Well Mr. Fleming, you radio inventors were all an interesting group of people, tell me, how did you come to develop the Glow Valve?

FLEMING: I say Old boy, you must speak a little louder. You see,

like Edison, I was quite deaf. Listened to too many electrical generators you know. Because of my disability, I was looking for a visible means of detection instead of sound, so by placing a plate inside of a light bulb and connected to an electrical circuit, AC became DC current and it could be seen on a galvanometer, and detect code signals.

(DEMONSTRATION)

MC: Quite a discovery sir, and what did you do with it?

FLEMING: Well, it did detect radio signals, so we began using it in The Marconi Company and manufactured the Glow Valves for others. We patented it on November 7, 1905. It was a little better than a cumbersome crystal detector, but many other men made improvements such as DeForest. You should talk to him. Cheerio Old Boy! Must blow now!

(GHOST FLEMING DISAPPEARS - CARRYING A GLOW LAMP)

MC: It seems there is quite a history to electronics with many men's contributions. Now let's see this man DeForest. He was known for many radio inventions, but is better remembered for his Triode Tube that made audio and RF. amplification possible.

Lee DeForest was born on August 26, 1873, to Rev. Henry and Ann Deforest. His father was not only a minister, but became president of a black college, Talladeega, near Birmingham, Alabama. It was difficult for a Yankee boy to grow up in this environment, in still the Confederate South. However, his family for the time was financially well off, and young Lee went to school in the North at Sheffield Institute and later Yale. Although his parents wanted him to be a minister, young Lee became an engineer. He was always inventing things at home, and wrote his Doctoral Thesis about Heinrich Hertz in the spring of 1898.

Lee DeForest's first job was with Western Electric Company's office in Chicago as parts and clean up boy, at \$8.00 per week.

He tried unsuccessfully to get a job with The marconi Company. In the meantime, he invented a better detector than Flemings and in 1900 took out his first patents. He and a friend organized the DeForest Wireless Telegraph Company. It was for a time very successful, rivaling The Marconi Company, but unscrupulous business men pushed Lee out of the Company and later the Company went bankrupt. However, Lee held on to one patent, the Triode Tube, which upon improvements was bought and used by AT&T telephone service, RCA Company, and others.

I wonder what Lee DeForest would say about his work today?

(ENTER GHOST OF DeFOREST)

DeFOREST: What is it you would like to know about my work?

MC: Yes, Mr. DeForest you are known best for the invention of the Triode Tube. How did this come about?

DeFOREST: Well, as you know sir, I worked long and hard in improving the wireless equipment. I improved tuning of spark transmitters and antenna equipment. Then I made a mineral detector, far better than Marconi's Coherers. Later, I developed an electropolytic detector, almost as good as the crystal detectors.

(DEMONSTRATIONS OF TUBES - (Detectors))

MC: I see, but what about this Triode Tube?

DeFOREST: Well, I began using the Fleming valve, but made improvements in it. I soon believed if a third element, a grid or spiral wire, was placed between the filament and plate, a small input signal would influence the polate circuit. This, of course, is history. It became the first amplifier for audio and FR signals. Many company's utilized my patent, but that fella Sarnoff of RCA stole my patent and pushed me out of the Company. We had many lawsuits over this, including lawsuits with Edwin

Armstrong over the regenerative detector. However, Major Armstrong did develop the most useful wireless inventions, the Superheterodyne and FM radio. You should talk to him.

(GHOST DeFOREST DISAPPEARS)

MC: Yes, Armstrong would be interesting to talk to. He was probably the most important contributor to inventions of modern radio development.

Edwin Howard Armstrong was born December 18, 1890, at 247 West 29th Street, upper Manhattan, New York City. He had two younger sisters. His father became manager of the American Division of Oxford Books of England. His mother was a school teacher, and many of his relatives were teachers.

Edwin grew up in this Brownstone house, near Central Park, until the age of 9. Then his folks moved to Yonkers, New York on the Hudson River. Edwin grew up in an astute Presbyterian family with rather strict discipline. One reason for the family to move out of New York City was Edwin's health. When he was 9 years of age, he developed a nerve disorder (called "Saint Virus Dance" at time), producing convulsions of face, neck and arms. Edwin never quite got over the affects, even in later life; at times contorting his face and neck.

However, Edwin was inspired as a boy by the books his father gave him, especially "The Boys Book of Inventions". It was here he learned of the many experiments of early pioneers as Hertz, Marconi, Edison, as well as Fleming and DeForest.

It was here in Yonkers, in a Brownstone house, up on a hill overlooking the Hudson River, that young Edwin, in an attic room, invented a practical regenerative receiver. Later Eswing worked at several different jobs in radio and eventually gained a BS degree in electricity. When WWI came he enlisted in the Signal Corp. where he worked with the primitive radios of the time. He began using his own ideas for radios for field service in the war, in France. It was here Captain Armstrong met a young Sergeant, Harry Houch, assigned as his assistant.

Harry Houck was just as interested in radio as Armstrong

and beginning here developed a life long friendship. Later in developing the Superheterodyne Receiver and developing FM mode of transmission. Harry Houck built most of the circuitry, being very meticulous in his work. He remained loyal to Armstrong throughout the years of many court battles over patent rights and developing modern FM broadcasting. I wonder what Armstrong and Houck would say about radio today?

(GHOST ARMSTRONG APPEARS)

ARMSTRONG: Well, Mr. Damron what could we say?

MC: Mr. Armstrong, or should I say "Major Armstrong", still in your Army uniform I see.

ARMSTRONG: Yes, I took great pride in serving my country in WWI. I made many of my experiments while in the Signal Corp.

MC: Tell us Mr. Armstrong, what were some of your most notable inventions?

ARMSTRONG: Well, of course, there were quite a few, but perhaps the Superheterodyne Receiver proved to be the most widely used until today. However, frequency modulation was my main interest, in developing a system for static-free reception. It didn't attract much interest in the beginning, but I see it is very valuable today. Your see, as you probably know FM varies the frequency of transmission and eliminates amplitude static or interference.

MC: Quite interesting Mr. Armstrong, and FM today is growing quite rapidly in broadcasting, with over 6,000 U.S. stations on the air. Likewise, FM is used in thousands of communication units. I understand you had quite a few legal battles over patent rights and royalties.

ARMSTRONG: Yes, unfortunately other people claimed my inventions and patent rights and the battles began. DeForest claimed he had developed Regeneration before me. RCA claimed my Superheterodyne, and it seemed everyone thought that FM was their special development. In fact I lost most of my fortune in

lawsuits. However, after my death my good wife, Marion, went to the Supreme Court with some very brilliant lawyers and won all my patent rights back for all time in history.

MC: Most interesting Major, but wasn't FM development your best interest?

ARMSTRONG: Yes, sure was. Harry Houck and I experimented in France during the War, in trying to eliminate AM static. After the war we built several FM circuits to prove FM practicality. No person or company seemed much interested in FM, so Harry and I built our own tower 425 feet high, at Alpine, New Jersey. By 1940 FM signals from our station was heard all over the East coast. People began noticing the clarity and fidelity of our broadcasts.

MC: What part did Harry Houck play in your work?

ARMSTRONG: Harry was my right arm, so to speak. He built most of our equipment and helped put it on the air. Wish he was here so you could talk to him. Yes, Mr. Damron, Ed and I worked on many radio developments. Here is some of our equipment.

(DEMONSTRATIONS)

In the beginning it was very bulky and took up much space, but with many improvements this changed. Today, with your transistors very good reception and high fidelity comes in small



(L-R) Cris Spradling, Jim Duffield,
Randy Damron, James Damron,
Patti McIntyre (not pictured)

packages. Ed and I take great pride in the we were a part of modern radio development. Let me show what it sounds like today, and we will be leaving you now. Carry on the good work!

**(PUTS ON RADIO
UNIT AND
LEAVES)**

"Ending of Play -
Lights On"

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Hello, My name is Jeff Neidlinger. It is my privilege to typeset this Antique Radio Gazette where I work at the Printing Press. I enjoy reading all of the interesting articles that are submitted each issue. It seems as if I know some of you already without ever meeting you.

Most of you as authors submit work to me from a computer, of which some of you even send me your disk. This really speeds up the typesetting, layout and design process. I would really appreciate it, if you do use a computer, for you to send me your articles. You can send your articles as usual to Lloyd McIntyre and include a disk, he'll in turn get them to me.

I am using an IBM compatible computer. If you use any of the following programs send them in: PageMaker, Write, Word Perfect, or WordStar.

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I'm looking forward to hearing from you. Thanks again.

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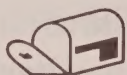
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Due to increased printing costs and the fact that over the last two years the increased size of the Gazette has added a unit of postage the Board of Directors authorized a modest \$3.00 increase in one year dues USA only. This will be effective January 1, 1994.

Take advantage of the five year membership and avoid the increase. This will help your club also by cutting down on the amount of renewals that our secretary must process. We hope to continue to bring the collecting hobby the only regular color magazine offered.

Tell your friends and sign up a new member today.

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The Printing Press apologizes for any inconveniences caused by captions being reversed on a few pictures in ARCA's last issue.



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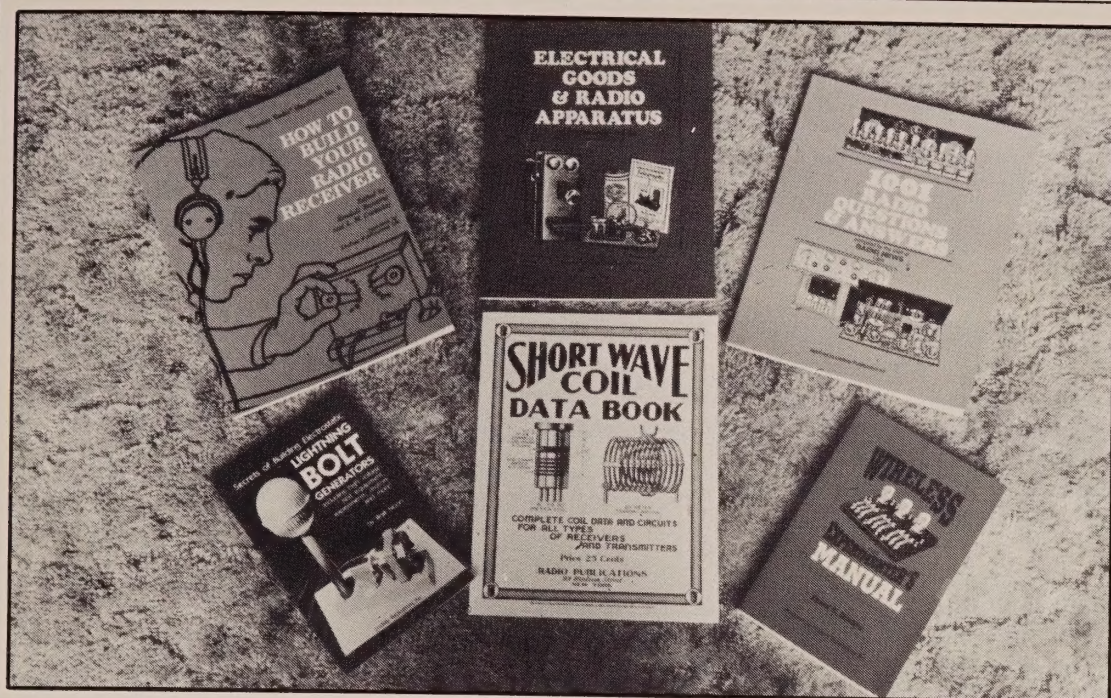
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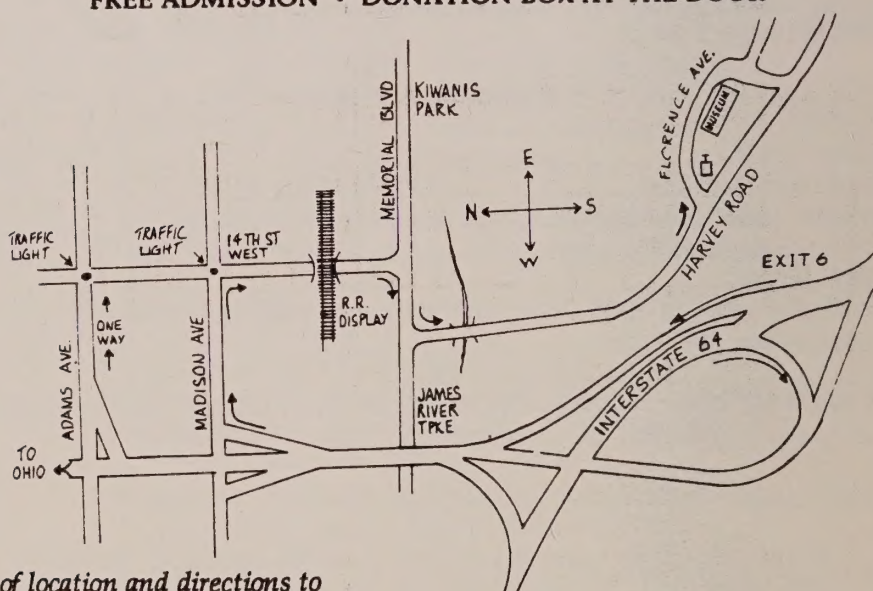
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